

AMENDMENTS TO THE CLAIMS

This Listing of Claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

1-98 (Canceled).

99. (Currently amended) ~~A method of forming a soldering iron tip,~~ The method of claim 152, further comprising providing ~~[[a]]~~ the copper or copper alloy core having a base portion and a forward extension portion, the forward tip portion having a tip end; wherein joining the metal particle sintered member to the copper or copper alloy core includes:

applying Ag particles to at least one of an inside surface of ~~a solder tip cap~~ the metal particle sintered member and the forward tip portion;

after the applying, fitting the ~~solder tip cap~~ metal particle sintered member on the forward tip portion; and

after the fitting, brazing the ~~[[cap]]~~ metal particle sintered member to the forward tip portion.

100. (Previously presented) The method of claim 99 wherein the applying Ag particles includes applying the particles in a paste which includes alcohol.

101. (Currently amended) The method of claim 100 wherein the applying includes each of the Ag particles having a size of between 0.1 ~~[[μm]]~~ and 50 ~~[[μm]]~~ micrometers.

102. (Previously presented) The method of claim 100 where the applying includes brushing the paste onto the inside surface and the forward tip portion.

103. (Previously presented) The method of claim 99 wherein the brazing is in a furnace.

104. (Currently amended) The method of claim 103 wherein the furnace is filled with $[[N_2]]$ nitrogen gas and has a brazing temperature of 700°C.

105. (Previously presented) The method of claim 99 further comprising before the brazing and the fitting, mounting a brazing filler metal ring to the forward extension portion.

106. (Previously presented) The method of claim 105 wherein the ring is a BAg-7 ring.

107. (Currently amended) The method of claim 99 further comprising applying flux to a joint between the $[[cap]]$ metal particle sintered member and the forward extension portion.

108. (Previously presented) The method of claim 107 wherein the flux applying is before the brazing.

109. (Previously presented) The method of claim 107 wherein the flux is a silver brazing flux.

110. (Previously presented) The method of claim 99 wherein the brazing is in a non-oxidation atmosphere.

111. (Previously presented) The method of claim 99 wherein the cap is an iron cap.

112. (Previously presented) The method of claim 99 wherein the forward extension portion has a longitudinal through-passageway, and the soldering iron tip defines a desoldering iron tip.

113. (Previously presented) A soldering iron tip formed by the method of claim 99.

114. (Currently amended) ~~A method of forming a soldering iron tip, comprises~~ The method of claim 152, wherein joining the metal particle sintered member to the copper or copper alloy core includes: applying a paste of Ag particles to at least one of an inside surface of a ~~soldering iron tip cap~~ the metal particle sintered member or a forward tip of an extension member of a soldering iron tip core; after the applying, inserting the $[[cap]]$ metal particle sintered member on the forward tip end; and after the applying, subjecting the $[[cap]]$ metal particle sintered member and the extension member to a brazing temperature.

115. (Previously presented) The method of claim 114 wherein the applying includes applying approximately 500 grams of Ag particles.

116. (Currently amended) The method of claim 114 wherein ~~the cap is a metal injection-molded cap~~ forming the metal particle sintered member includes metal injection molding the base material into a cap.

117. (Currently amended) The method of claim 114 wherein the ~~[[cap]]~~ metal particle sintered member is an iron cap.

118. (Currently amended) The method of claim 114 wherein the diameters of the Ag particles are between 0.1 ~~[[μm]]~~ and 50 ~~[[μm]]~~ micrometers.

119. (Previously presented) The method of claim 114 further comprising before the subjecting, mounting a brazing filler metal ring on the extension member.

120. (Previously presented) The method of claim 119 wherein the mounting is before the inserting.

121. (Previously presented) The method of claim 119 wherein the mounting is against an abutment surface of the extension member.

122. (Previously presented) The method of claim 121 wherein the abutment surface extends out perpendicular to a longitudinal axis of the extension member.

123. (Previously presented) The method of claim 121 wherein the abutment surface extends out an angle from a longitudinal axis of the extension member away from the forward tip.

124. (Previously presented) The method of claim 119 wherein the ring is a silver braze ring.

125. (Previously presented) The method of claim 119 further comprising after the mounting, applying flux over the ring.

126. (Previously presented) The method of claim 125 wherein the applying flux is before the subjecting.

127. (Previously presented) The method of claim 125 wherein the applying flux is after the subjecting.

128. (Previously presented) The method of claim 125 wherein the flux is AWS 3A type or AWS 3B type flux.

129. (Previously presented) The method of claim 114 wherein the subjecting is in a furnace and at approximately 700° C for approximately 10 minutes.

130. (Currently amended) The method of claim 129 where the furnace is filled with at least one of the gases selected from the group consisting essentially of ~~N₂, H₂, and Ar~~ Nitrogen gas, Hydrogen gas, and Argon gas.

131. (Currently amended) The method of claim 114 further comprising applying flux to a joint between the [[cap]] metal particle sintered member and the extension member.

132. (Previously presented) The method of claim 131 wherein the flux is a silver brazing flux.

133. (Previously presented) The method of claim 114 wherein the applying includes applying the paste to both the inside surface and the forward tip end.

134. (Currently amended) The method of claim 114 further comprising applying flux to the joint between the [[cap]] metal particle sintered member and the extension member, and the subjecting includes heating the [[cap]] metal particle sintered member and the extension member in an inert atmosphere.

135. (Currently amended) The method of claim 114 wherein the inserting includes pressure fitting the [[cap]] metal particle sintered member on the forward tip end.

136. (Previously presented) The method of claim 114 wherein the cap is an iron cap.

137. (Withdrawn) A soldering iron tip formed by the method of claim 114.
138. (Withdrawn) A soldering iron tip, comprising:
a copper or copper alloy core having a base portion and a forward extension portion; and
an iron cap brazed to a tip end of the forward tip portion with a silver particle layer
sandwiched between the cap and the forward extension portion.
139. (Withdrawn) The soldering iron tip of claim 138 further comprising silver-based brazing
filler in the joint between the end of the cap and the forward extension portion.
140. (Withdrawn) The soldering iron tip of claim 138 wherein the soldering iron tip defines a
solder suction tip and the forward extension portion has a suction through-passageway.
141. (Withdrawn) The soldering iron tip of claim 138 wherein the cap is a metal-injection-
molded cap.
142. (Withdrawn) The soldering iron tip of claim 138 further comprising a brazing filler metal
ring on and brazed to the extension member between an abutment surface of the extension
member and a proximal end of the cap.
143. (Withdrawn) The soldering iron tip of claim 142 wherein the abutment surface is
perpendicular to a longitudinal axis of the extension member.
144. (Withdrawn) The soldering iron tip of claim 142 wherein the abutment surface is at an
angle of approximately 5 to 10 degrees relative to a longitudinal axis of the extension member
and away from the forward tip.
145. (Withdrawn) The soldering iron tip of claim 138 further comprising a top coating not
wetttable by solder on the base portion.
146. (Withdrawn) The soldering iron tip of claim 145 wherein the top coating is a ceramic
material, cermet material or metal.
147. (Withdrawn) The soldering iron tip of claim 145 further comprising an undercoating on
the core and underneath the top coating.

148. (Withdrawn) The soldering iron tip of claim 138 wherein the core includes a rearwardly-opening cavity.

149. (Withdrawn) The soldering iron tip of claim 148 further comprising an aluminum oxide film in the cavity.

150. (Withdrawn) The soldering iron tip of claim 148 further comprising an Ag-Al-Cu alloy coating layer in the cavity.

151. (New) A method of making a soldering iron tip with a metal particle sintered member, comprising: forming the metal particle sintered member from a sintering base material, wherein the weight content of the sintering base material in the metal particle sintered member is between 60% and 99.99% by weight, wherein the sintering base material includes at least one of iron particles, nickel particles, and cobalt particles; and joining the metal particle sintered member to a copper or copper alloy core.

152. (New) The method of claim 151, wherein forming the metal particle sintered member includes:

mixing a sintering base material or a sintering base material and sintering additive with a binder;

shaping the green compact by the metal injection molding; and sintering.

153. (New) The method of claim 151, wherein the sintering base material does not include copper.

154. (New) The method of claim 151, wherein the sintering base material is mostly iron.

155. (New) The method of claim 151, wherein the sintering base material consists of one or a combination of iron, nickel, and cobalt.

156. (New) The method of claim 151, wherein the sintering base material includes iron particles having a purity of no less than 95.5%.

Application No. 10/785,152
Amendment dated November 30, 2007
Reply to Office action of July 2, 2007

157. (New) The method of claim 100, wherein the paste includes Ag particles and no other metal particles.

158. (New) The method of claim 100, wherein the paste has a melting temperature equivalent to the melting temperature of silver.